Summary of Africa RISING Endamehoni Site R4D activities (2012-2016 February)

# Compiled by: Mohammed Ebrahim

# Africa RISING Endamehoni Site Coordinator

February 2016

Brief Summary of R4D activities performed by Africa RISISNG Endamehoni Site (2012-2016 February)

## **Introduction of Africa RISING project**

The Africa Research in Sustainable Intensification for the Next Generation (Africa RISING) is Research for development project supported by USAID as part of the U.S. government’s feed the Future initiative.

In Ethiopia, the project is operational in Amhara, Oromia, Tigray and SNNP regions. In Tigray Region the project is working in two kebeles of Endamehoni Woreda (namely **Tsibet and Embahasti Kebeles**)

# The main Goal of the project:

The main aim of the project in the Ethiopian highlands is to identify and validate solutions to the problems experienced by small-holder crop-livestock farmers. Intensification, action research, food security, income diversification and nutrition are pillars of the project. The project in the two intervention kebeles introduced new technologies and practices on farmers’ field trough participatory approach, Changed farmer’s perception and attitudes towards technology and improved practices. Enabled farmers to learn and use new practices/technologies and increased their production and income from a given plots of land. Now the project is looking ways to address a wider communities through scaling of the best technologies and practices.

# **Expected outcomes in the first phase:**

**By the end of 2016:**

* New technologies and practice which fit to the local condition will be evaluated and selected for further scaling and wider impact.
* Farmers will develop new knowledge and bring attitudinal change to wards technology and improved practice.
* Farmers will adopt new technologies, practices, intensification and increased their income and nutrition.
* Strong partnership will be developed with local institutions/stakeholders
* Research institution and projects will adopt/start to use Participatory research approach (IP)

## **The Research Thematic Areas**:

Through different diagnostic studies, the project identified seven research thematic areas around which research interventions developed. These are:

1. Feed and forage development.
2. Field crop varietal selection and management.
3. Integration of high value products into mixed farming systems.
4. Improved land and water management for sustainability.
5. Improving the efficiency of mixed farming systems through more effective crop-livestock integration.
6. Cross-cutting problems and opportunities (market, nutrition, gender), and
7. Knowledge management, exchange and capacity develop­ment

Depending on the above seven research thematic areas, Africa RISING project develop seven assessment and 3 on action research protocols in 2012 & 2013, 15 action research and 5 assessment in 2014, 15 action research and 5 assessment studies again in 2015 and implemented at Endamehoni AR site. Tigray Agricultural research institute (TARI), TARI-Alamata center, EIAR-Mehoni center, mekele university, Maichew ATVET college, Endamehoni woreda Agri-office, GRAD project and 8 CGIAR centers project are some of the project key partners who actively participated in the implementation process of research activities and other cross cutting Issues.

Research for development approach

In Ethiopia mostly the conventional (to-down or technology driven extension) is the common technology generation and extension system, which results slow technology diffusion and adoption. To break this conventional approach Africa RISING project introduce/use participatory approach (IP) in the whole process of problem identification and prioritization, intervention planning, implementation and evaluation. In 2014 the project establish Innovation platform both at the woreda and Kebele levels. The platform members comprises from research, college, university, extension, microfinance, local NGO, union, cooperative and other public institutions. The IP helps to mobilize communities, Identify and prioritize interventions, share resources and responsibilities, and to facilitate learning /sharing among stake holders and technology scaling.

# Africa RISING Project, Endamehoni site major activities- 2012:

In 2012 different diagnostic and assessment studies conducted in different time to characterize the farming system, Identify challenges, opportunities and potential areas of intervention.

Some of the major activities performed were:

* + Conducting diagnosis study for systems understanding (Telephone survey, Livelihood survey using SLATE, PCA, IMPACTlite survey, AKT5 tool, FEAST and TECHfit and Market/ Value chain studies)
  + Research and intervention Site selection,
  + Key stakeholders/partners identification,
  + Capacity Building of partners(training)

# Africa RISING Project, Endamehoni site major activities in 2013:

In 2013 the project major activities were around building community trust, strengthening manpower, partnership and on-farm research activities including:

* Introducing the project and its objective to farming communities
* Africa RISING in 2013 main season started someone on farm research activities on potato, fababean, and wheat demonstration over 18 farmers. After participatory mid and end season evaluation two potatoes (Bele and gudene) and one wheat (Mekele-4) varieties were selected as varieties AR site and other similar Agro ecological kebeles. Potato seed multiplication and DLS construction in the belg season at two farmer’s field. Both in Mehere and belg season field visit and field days organized to popularize the technology and the project itself.
* Crop and soil based on-farm fertilizer research by Agricultural Transformation Agency,
* Assigning Research Site coordinator with required logistics (one vehicle, and one motor bike, office facilities and operational budget).

# Africa RISING Project, Endamehoni site major activities in 2014:

* ***On farm research and assessment studies***
* Rapid market VC assessment survey for three crops (wheat, faba bean and potato), livestock (small and large ruminants VC- live animal, meat VC, dairy, and feed agribusiness) and commodities conducted, actors identified, value chain mapped, problems identified, possible interventions designed and the final report shared online),
* Sub-kebele selection depending on accessibility, availability of model farmers
* More than 9 food crops, 2 feed/fodder, 2 tree and Fruit and 1 soil and water conservation research protocols were developed by the CGS centers and brought to the site for implementation.

## Capacity building, learning and knowledge sharing mechanism:

In addition implementing participatory on farm research, Africa RISING project had different partners’ capacity building activities. Mid-End season evaluation, field visit, field days and experience exchange were some of the methods used farmers and other partners to learn, raise their awareness and interest and to popularize our technologies. The project also capacitate farmers, DAs, experts, and researchers through organizing deferent training, meeting and workshops. Some of the capacity building activities the project undertaken are:

## Short term training and experience sharing visit:

* + FESAT and Techfit training
  + Apple fruit tree management and utilization training at Debre Birhan
  + Tree Lucerne management and utilization training for tree Lucerne FRGs at Embahsti and Tsibet kebeles.
  + Apple production and management basic training (before planting)
  + Practical training on how to produce seed and ware potato including (chemical spray system)
  + IPs facilitation training in Addis,
  + Integrating Gender In to Agriculture training in Addis
  + CropSyt modeling training in Addis,
  + Field days, visits, mid and end season evaluations :

Field visit, field days, mid and end season evaluation were organized for farmers, experts and other government officials including zonal and regional extension and administrators on different on farm research activities. Such learning event helps farmers and other participants learn from the on farm research activities, create interest, develop trust to the technologies, and select best technologies and management practices for wider scaling and dissemination. It also helps to foster cross-project learning and popularize the project and its work as it involves all potential partners.

* Workshops and meeting
* Endamehoni woreda and kebele IP establishment meeting-
* Farmers research group identification meeting
* Tsibet and Embahsti kebele IP meeting
* Endamehoni woreda second IP meeting
* Value chain Draft write shop (At Addis ILRI Campus)
* Review and finalization of value chain assessment study (At Addis ILRI Campus)
* Africa RISING annual planning meeting/Workshop (At Addis ILRI Campus)
* Africa RIING annual review and planning meeting (At Tanzania, Arusha)

Table 1: Number of participant farmers and protocols list for the year 2014

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| No |  | Participant farmers per research kebele | | | | | |
|  | List of protocols | Embahsti | | | Tsibet | | |
|  |  | Male | Female | Total | Male | Female | Total |
| 1 | Multipurpose fodder tree(Tree Lucerne ) planting | 20 | 6 | 26 | 28 | 4 | 32 |
| 2 | High value fruit tree (Apple) plan. | 15 | 10 | 25 | 19 | 6 | 25 |
| 3 | Bridging yield gap fertility trial | - | - | - | 29 | 2 | 31 |
| 4 | Yield gap through farmer practice | 28 | 5 | 33 | - | - | - |
| 5 | Conducting Community seed production | 3 | - | 3 | 3 | - | 3 |
| 6 | Participatory variety selection | 3 | 2 | 5 | 5 | - | 5 |
| 7 | Raised bed | 2 | 1 | 3 | - | - | - |
| 8 | Oat Vetch fodder production | 15 | 1 | 16 | 5 | 1 | 6 |
| 9 | Residue shade and Feed trough | 11 | - | 11 | 8 | 1 | 9 |
| Total |  |  |  | 122 |  |  | 111 |

Table 2: Training event, field days and workshop participants in 2014.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Partners | Field days, visit, mid and end evaluation | Trainings within & outside the site | Workshops/meetings within and outside the site | Survey | Total |
| Farmers | 398 | 158 | 228 | 260 |  |
| Extension | 29 | 11 | 27 | 2 |  |
| Research | 4 | 9 | 19 | 11 |  |
| University/coolege | 6 | 4 | 12 | 3 |  |
| NGO | 1 | 1 | 1 | - |  |
| CG-Centers | 14 | 11 | 25 | 11 |  |
| Others government sector | 21 | 1 | 23 | 1 |  |
| Total | 473 | 195 | 353 | 288 | 1309 |

# Africa RISING Project, Endamehoni site major activities- 2015:

Africa RISING in 2015 focus on Capacity building, strengthening IPs and partners engagement, implementing seed multiplication, on farm trials, field monitoring, feedback assessment and other data collection activities. The project main activities were:

*Action research and Assessment studies*

* *Crop residue shade and feed trough construction (20 feed trough and feed trough)*
* *Tree Lucerne nursery establishment and seedling preparation*
* *Walnut seedling planting, agreement with Alamata ARC to handle the whole management and data collection activities.*
* *Trial site and farmers selection with the kebele IPs*
* *Planting of 9 food crop related protocols (CSM, PVS, Fababean IDM, wheat fertility trial and Raised bed), and 5 feed related protocols (Oat-vetch, tree Lucerne, sweet Lupine Desho grass and Feed shad & trough construction*
* *Weeding and fertilizer application of on farm trials*
* *Harvesting of trials and data collection*
* *Data collection on Apple and tree Lucerne growth & survival and other on farm trials technical data (management practice, input, disease, flowering, maturity and yield data)*
* *Surveys and Assessment studies (tree Lucerne baseline survey, Irrigated fodder feedback assessment, sustainability perception, sustainable agricultural intensification survey, MSC story collection, and crop residue and shade feedback assessment/collection)*

## *Capacity building, learning and knowledge sharing mechanism*:

## Short term training and experience sharing visit:

* To capacitate farmers and partners RISING project in 2015 organized training on theoretical and practical apple production, management and disease control (for farmers, DAs and experts), Sustainable agricultural intensification survey training (researchers and experts), OCs , Peformax, organization and management training (for Site coordinator and Assistance site coordinator), Tree Lucerne management and production training (for FRGs).
* Seed production and handling training for seed producer farmers
* Field days, visits, mid and end season evaluations :
* Several field visit for apple and tree Lucerne FRGs (within the site), Crop residue and feed through field visit for 4 woredas extension and administration, other on farm trials visit for zonal and woreda officials were arranged .
* Two big field days organized and framers, researchers, extensions, and other government sector officials were participated. The one field day is organized by the project for zonal, woreda and kebele level participants. The other field day is organized by the regional office of agriculture (regional farmers’ field day), model farmers, researcher, extensions, university, NGOs and other sector representatives from the region, zones and woredas were participated.
* Mid/end season evaluation of PVS were also arranged; farmers and extensions evaluated the performance of the PVS with their own criteria and select best varieties with the context of the local situation.
* Workshops and meeting

To learn/share, plan, discuss on issues Africa RISING Endamehoni site organized several meetings with farmers and partners. Some of this meetings are

* FRG meeting (farmers to learn each other and improve the management practice of on farm trials (specially apple and tree Lucerne FRGs)
* Scaling up meeting with local partners (to discuss and set the scaling plan)
* IP technical group meeting (to discussed on the result/end season data of 2014 protocols, revised the scaling up plan, identified the training needs of each FRGS and Identify the most significant change stories.
* Tsibet and Embahsti Kebele IP meeting (to learn/share to and from farmers, to discuss on success and challenges)
* 3rd Woreda IP meeting (to learn/share to and from IP members, to discuss on success/ challenges)
* Mid- term review of Africa RISING project (there was a god arrangement internal reviewers to discuss with partners and farmers)
* Capacity building material provision meeting (short meeting was organized to update key partners about the project interventions and its capacity building effort.

# Local partners Capacity need assessment and gap filling

Table 3: Need assessment and gap filling for Africa RISING project Endamehomni site local partners in 2015

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Partner institution** | **Materials Provided** | | | |
| **Laptop** | **Desktop** | **Multipurpose copy printer** | **LCD** |
| Alamata Agricultural research institute | 3 | 2 | 1 | - |
| Endamehoni office of agri culture | 2 | 2 | 1 | - |
| Maichew ATVET college | 1 | 3 | 1 | - |
| Mehoni Agricultural research center | 2 | 1 | 1 | - |
| Total | 8 | 8 | 4 | - |

# Graduate students Attachment:

Two MSC students from Mekele University and Maichew AVET College were sponsored to their research and attached with the project activity.

* Other activities
* Seed producer Cooperative establishment (10 new AR farmers joined the existing cooperative and they will continue to produce the seed to supply to their coop).
* In addition market linkage with Tsibet Potato seed producer coop also done and almost all AR farmers sold their potato seed to the cooperative at reasonable price.
* Attending to TARI-NGO meeting and presenting Africa RISING project activities progress to popularize the project itself and its work.
* Arranging potato seed inspection (the seed inspection team from the region insure as our potato seed multiplication quality enough).
* Row planter development, in collaboration with Maichew ATVET college two row planter developed, and evaluated. The one row planter will be further evaluated and distributed to users.

**Table: 4 List of on farm Activities and participant farmers in 2015 main cropping season**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| No | List of activities | No of participant farmers per kebele | | | | Total areas |  |
|  |  | Tsibet Kebele | | E/hasti kebele | | Total No of participant | Remark |
|  |  | M | F | M | F |  |  |
| 1 | Potato seed multiplication (and fertility trial) | 23 | 4 | 8 | 4 | 39 |  |
| 2 | Fababean seed multiplication | 8 | 1 | 11 | 1 | 21 |  |
| 3 | Wheat seed multiplication | 5 | 1 | 3 | - | 9 |  |
| 4 | Barley seed multiplication | 2 | 2 | 3 | - | 7 |  |
| 5 | Fababean IDM | 1 | 1 | 2 | - | 4 |  |
| 6 | Durum wheat PVS | 2 | - | 2 | - | 4 |  |
| 7 | Field pea PVS | 2 | - | 1 | 1 | 4 |  |
| 8 | Lentil PVS | 2 | - | 1 | 1 | 4 |  |
| 9 | Lupine Adaptation trial | - | - | - | 1 | 1 |  |
| 10 | Oat-vetch demonstration | 12 | 3 | 10 | 5 | 30 |  |
| 11 | Tree Lucerne demonstration | 13 | - | 9 | 1 | 23 |  |
| 12 | Desho grass Demonstration | 3 | - | 8 | - | 11 |  |
| 13 | Crop residue shade and feed trough | 8 | 1 | 11 | - | 20 |  |
| 14 | Wheat fertility trial | 28 | 9 |  |  | 37 |  |
| **Total No of participant** | | 109 | 22 | 69 | 14 | **214** |  |

Table 5: Training event, field days and workshop participants in 2015

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Partners | Field days, visit, mid and end evaluation | Trainings within & outside the site | Workshops/meetings within and outside the site | Survey |
| Farmers | 236 | 107 | 53 | 300 |
| Extension | 38 | 5 | 26 | 1 |
| Research | 13 | 4 | 17 | 9 |
| University/college | 6 | 1 | 19 | 3 |
| CG-Centers | 2 | 7 | 28 | 10 |
| Others government sector | 21 | 1 | 20 | - |
| Total | 316 | 125 | 163 | 323 |

# General achievements:

* High yielding, early maturing, drought, disease tolerance, resistance and marketable food crop varieties were tested, evaluated and selected for further scaling and wider impact ( WHEAT-mekele-4, and Hidase heat, POTATO- Gudene, Belete and Jalene,, BARLEY- HB1307, FABA BEAN- Gebelcho, LENTIL-Derash and Alamaya, FIELD PEA-Megeri and Bilao, DURUM wheat-Ude, Mankude, and Bakalcha varieties were selected as a best varieties for the locality).
* Conduct Faberaben IDM research and able to control the disease. Disease resistant variety, seed treatment and antifungal chemical spray help to reduce/avoid the sever fababean damage and able to get higher production, while local varieties with farmers practice cause complete loss of production.
* Farmer develop new knowledge and brought attitudinal change to wards technology and improved practice. High Demand of technologies created.
* Some farmers adopt new technologies, practices, intensification and increased their income and nutrition. Improved varieties of potato, wheat, barley, fababean are replacing the local varieties, farmers who use the technologies shows high yield/ income increment. Proper input utilization, row planting, crop rotation are also some of the improved agronomic practices that the farmers practiced/adopt.
* 20 feed trough and sheds were constructed, the technology reduce/make zero the wastage of CR during storage and feeding. It also helps farmers to store all kind of CR. So the technology increase both the quantity and quality of feeds and reduce of avoid unnecessary expense for CR purchase. Now the technology is scaling both with in AR site and outside AR site.
* 6 diffuse light stores constructed, farmers increase their awareness on potato seed production and handing.
* New forage varieties (oat-vetch and tree Lucerne) were introduced and farmers who test the varieties got high bio mass yield, and good milk yield and animal body performance.
* Potato, wheat, fababean, and barley seeds multiplied and farmers easily can get the seed form farmers, it enhanced the technology diffusion.
* Scalable AR technologies identified (potato-Gudene, blete and Jalene, wheat-mekele4 and Hidase, Fababean –Gebelco, Oat-Vetch, CR shed and feed trough, Apple technologies) and IP technical groups set the scaling plan.
* One seed producer cooperatives established at Tsibet kebeles (It produced/collected 285 quintal of potatoes in the last two years), the cooperative with its new members (AR seed producer farmers) will produce potao, wheat, fababean and barley seeds in rotation.
* Strong partnership created with local institutions/stakeholders and functional IP established from kebele-to zonal level.
* Participatory research approach (IP) practiced and attempt break conventional research/extension approach.
* local partners are Engaging in scaling best bit technologies (example wheat Enadmehoni Office of Agriculture scale up 75 quintal of Hidase wheat varieties in three other kebeles)
* Wider community and partner institutions awareness creation through field day, field visit, and technology evaluation.
* Capacity balding of partners, through different technical training ( IP, Gender, software and survey tools training), and office material supports farmers, (Laptop(8), desktop(8) and multipurpose printer(4) for four key Partner institution.
* Four (4) most significant stories Identified and collected around wheat, potato, Crop residue sheds and feed trough, and Innovation plat form.
* Baseline, VCA, and other many assessment studies conducted and enough information/evidences generated (to propose the right interventions).
* Two row planters developed and evaluated,

## Challenges:

* Planting time overlap with partner institute and dependency on the willingness of partners.
* Too many protocols, very short plating season (days) and less or No CG involvement in implementation of protocols; all protocols implementation left for AR staffs and it creates work overload (burdens) on the site staff. Because of Budget deficit CIP-AR staff can’t help us both in data collection and harvesting activities.
* Small land holding size, lack of farmers interest to divide their lands in to different plots ( associating with the small land handing size farmers are not interesting to divide their lands, they worried for the land left for border and b/n blot spacing).
* Some partners incentive over expectation (Ex farmers- asking compensation for the border and b/n plot spacing (for experimental protocols), dependency and Resistance to pay pack the input they took (ex, potato seed) and other Partners institutions – expecting high periderm rate.
* Presence of free grazing and animal damages on Tree Lucerne and apple seedlings.
* Delay in protocol development causes to late in site and farmers selection; inappropriate farmers selection and poor on farm research management(like weeding)
* Too many holydays and high weed infestation leads poor trial management, rainy weather condition causes difficulties to harvest and thresh on time and leads wastage of grains.
* Apple disease like aphid, Powdery mildew and presence of bees in the area to prevent the disease through chemical spray.
* Lack of commitment from some farmers’ side to fence, water, manure and hoe the Tree Lucerne and apple seedling/tree.
* Partners work overload and turn over
* Delay in advance and petty cash settlement, mostly it takes from 20-30 days.

# Opportunities:

* Proximity of the site and availability of all-weather road
* Availability of Potential partners, as the site office is located at the zonal town it we have many potential partners.
* Good rain fall
* No/Less research intervention site and good technology demand
* Presence of Assistant site coordinator
* Good budget allocation for site activities
* Presence of the site vehicles (motorbike and Car) helps to run the site activities smoothly
* Willingness of farmers to work with the project,
* The site staff Good research extension and communication experience